Check List the journal of biodiversity data

NOTES ON GEOGRAPHIC DISTRIBUTION

Check List 11(4): 1694, 14 July 2015 doi: http://dx.doi.org/10.15560/11.4.1694
ISSN 1809-127X © 2015 Check List and Authors

The Coffee Red Mealybug, *Nipaecoccus coffeae* (Hempel) (Hemiptera: Pseudococcidae), an uncommon mealybug attacking coffee plants in Brazil

Ernesto Prado[1, 2*], **Lenira V.C. Santa-Cecília**[1, 3], **Paulo R. Reis**[1, 4] and **Eduardo Mosca**[5]

1 EPAMIG Sul de Minas/EcoCentro, P. O. Box 176, CEP 37200-000. Lavras, MG, Brazil
2 Visiting Researcher
3 FAPEMIG Scholar
4 CNPq Scholar
5 Private Coffee Consultant
* Corresponding author. E-mail: epradoster@gmail.com

Abstract: The Coffee Red Mealybug, *Nipaecoccus coffeae* (Hempel, 1919), was rediscovered in coffee crops in Brazil. Some brief recognition characters are provided to separate this mealybug from other species of the genus present in Brazil. It appears to be a rather uncommon parasite of coffee plants and is considered a secondary pest. This species is recorded for the first time in the State of Minas Gerais widening its distribution area. A predaceous hoverfly larva, *Ocyptamus stenogaster* (Williston, 1888), was also found predating eggs.

Key words: Coccoidea, *Coffea arabica*, Insecta, *Ocyptamus stenogaster*, predator

A number of 15 mealybug species have been reported attacking coffee plants in Brazil of which some are known only from the original reference or through a few posterior records of occurrences, and subsequently included in catalogues. Their importance is increasing as agriculture pests on coffee crops, especially species such as *Planococcus citri* (Risso, 1813), *Pl. minor* (Maskell, 1897), *Dysmicoccus texensis* (Tinsley, 1900) and *Pseudococcus longispinus* (Targioni Tozzetti, 1867), being the remaining species only occasionally found (Santa-Cecilia and Souza 2014).

Eight *Nipaecoccus* species are reported from Brazil (Ben-Dov et al. 2014) but only the Coffee Red Mealybug has so far been found on coffee.

The Coffee Red Mealybug, *Nipaecoccus coffeae* (Hempel, 1919), was originally described in the genus *Eriococcus* Targioni Tozzetti, 1868 (Eriococcidae) and later assigned to the family Pseudococcidae, genus *Nipaecoccus* by Williams and Granara de Willink (1992). The original report by Hempel (1919), based on collections from coffee plants from Campinas and São Paulo, is the first and only published account of this species in Brazil, despite of the economic importance and intensive surveys of the crop. Field observations for about 10 years ago have indicated its presence in the region of Araguari (Minas Gerais) but no identification was done at that time (E. Mosca, personal communication). It is noteworthy that since then no other occurrence is known. Records outside Brazil are not reported.

A detailed description and illustration is given by Williams and Granara de Willink (1992) who examined the type material.

Coffee (*Coffea arabica* L. (Rubiaceae)) twigs were collected by EM in a coffee farm located in the county of João Pinheiro, Minas Gerais, Brazil (17°44′33″ S, 046°10′21″ W), 3 September 2014. Mealybugs were slide-mounted according to methodology of Williams and Granara de Willink (1992) and examined under a phase contrast microscope. Identification was made using the descriptions of Hempel (1919) and Williams and Granara de Willink (1992). Seven specimens were studied and deposited at the Laboratory of Biological Control of EPAMIG Sul de Minas/EcoCentro, Lavras, Minas Gerais, Brazil. Predaceous larvae present with mealybugs were reared until adulthood and subsequently identified.

The collected specimens fit with the available descriptions of the species even of the ovipositing female can reach up to 4.0 mm long. The body is red and enclosed in a cottony secretion (Figure 1A and 1B). Eggs and first instars were observed at the time of the collection in September. Ovipositing females were concentrated at the base of the twigs and first instars were wondering on the twigs and leaves. Field damage

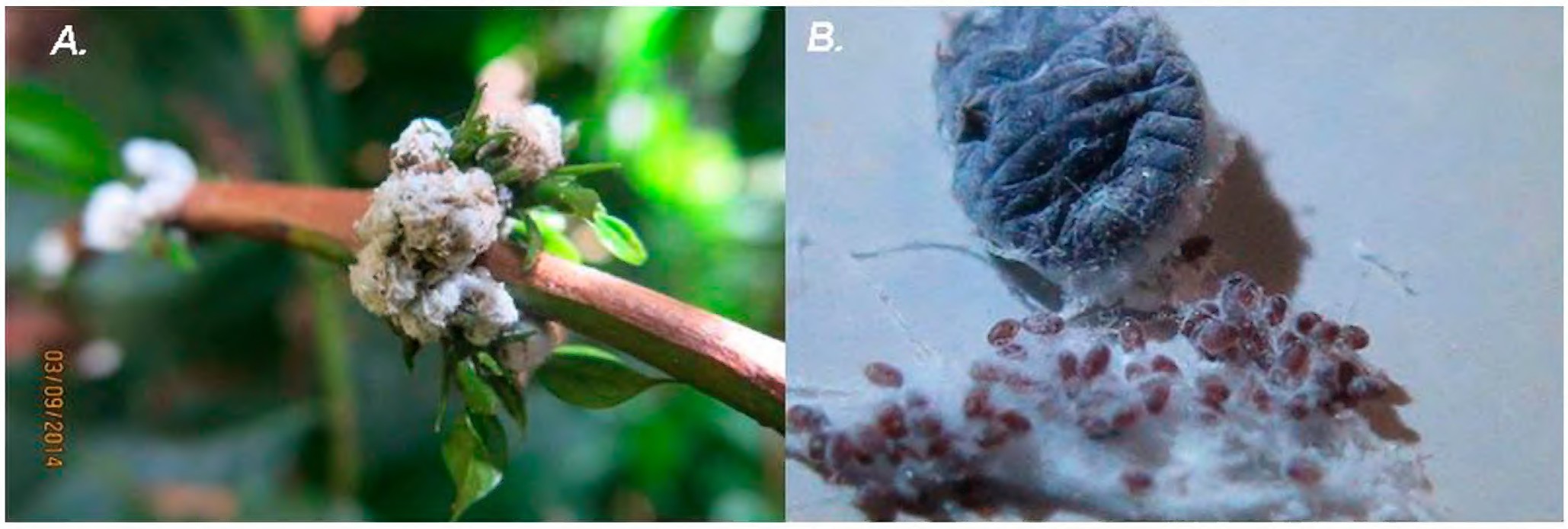

Figure 1. *Nipaecoccus coffeae*: cottony sac (A); ovipositing adult female containing eggs in the cottony sac (B).

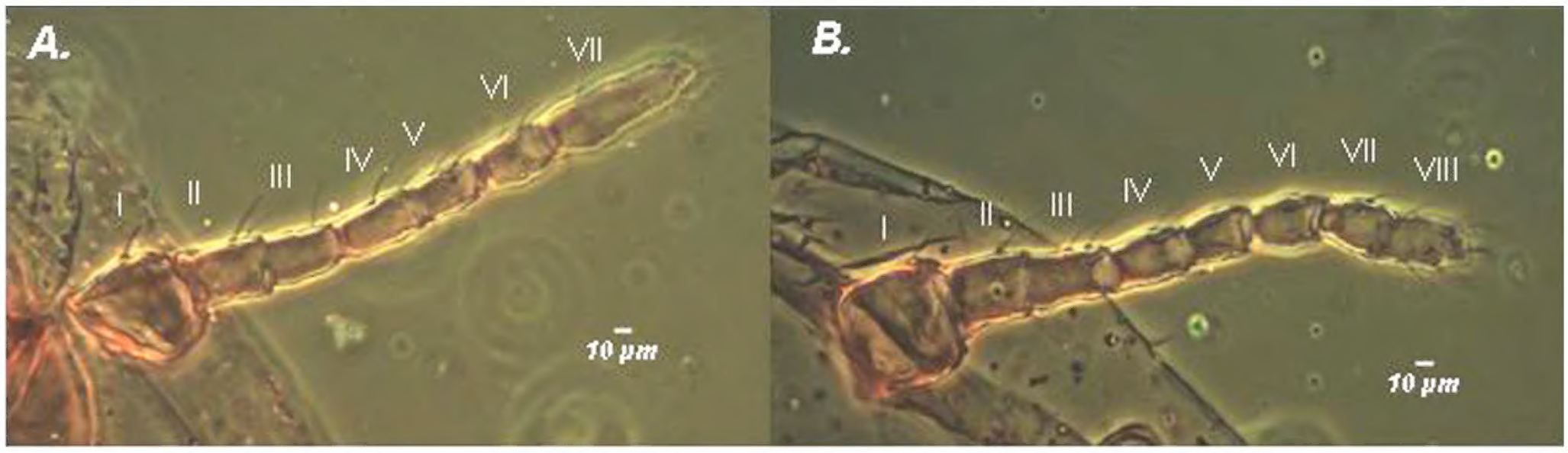

Figure 2. *Nipaecoccus coffeae*: 7-segments antenna (A); antenna apparently with 8 segments (B).

Figure 3. *Nipaecoccus coffeae*: group of pre-anal abdominal cerarium showing broadly lanceolate setae.

has been considered secondary and the mealybug population trends to disappear or remains at low level until the end of the growing season (E. Mosca, personal communication).

This species belongs to the *Nipaecoccus* group in lacking oral-rim tubular ducts and the following characters based on the adult female are useful to separate this species from others of the same genus known from Brazil: (1) normally 7-segmented antenna (Figure 2A) but sometimes there are signs of division of the last segment appearing as 8-segmented (Figure 2B); (2) pre-anal abdominal cerarii with groups of 4–8 lanceolate setae (Figure 3); (3) presence of circulus; (4) multilocular disc pores present in dorsal and ventral surface; (5) ostioles represented by the posterior pair only (Figure 4); (6) legs without translucent pores; (7) dorsal oral collars of two sizes (Figure 5); (8) anal lobe cerarii with two conical setae.

Among the cottony sac some predaceous hoverfly larvae of *Ocyptamus stenogaster* (Williston, 1888) (Syrphidae) were found predating eggs (Figure 6).

The few collections of this mealybug suggest that is a sporadic pest of coffee with a distribution that includes the states of São Paulo and Minas Gerais. No other host is known for this insect. The characters fit quite well with those stated by Williams and Granara de Willink (1992) and the absence of translucent pores on the hind legs distinguishes this species from *Nipaecoccus* sp.1 reported by Kondo et al. (2008) and identified as close to *N. coffeae*. Slight differences with previous descriptions, as body size or number of cerarium setae, can be considered as intraspecific variation, which is frequent in mealybugs.

Surveys including its geographical distribution, probable native hosts and further field monitoring are necessary. The genus *Ocyptamus* is present in the

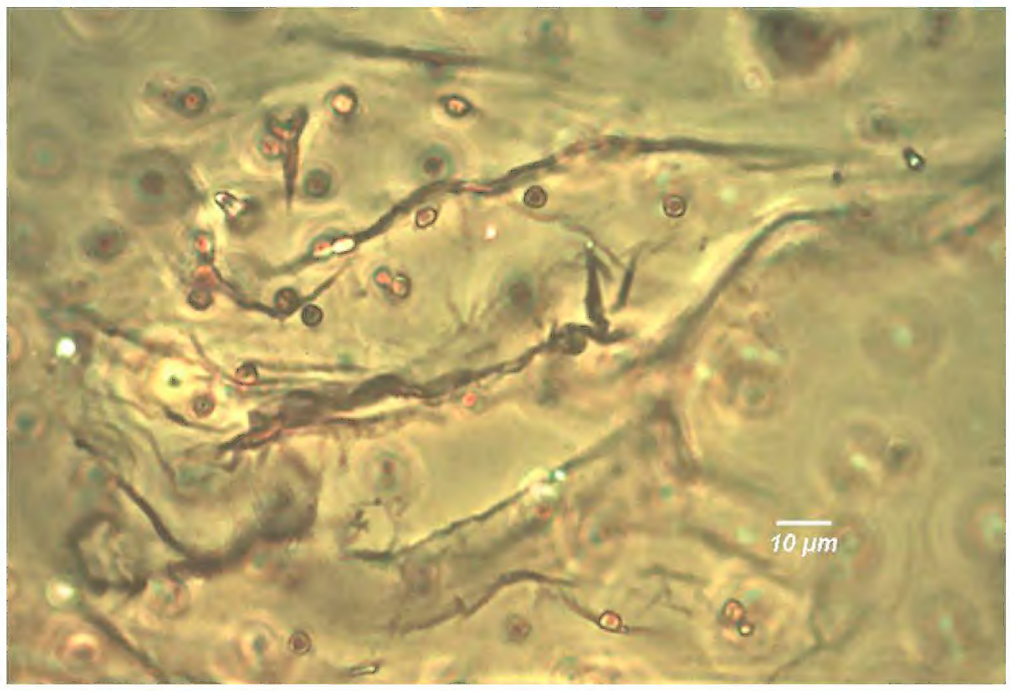

Figure 4. *Nipaecoccus coffeae*: posterior ostiole.

Figure 5. *Nipaecoccus coffeae*: two sizes of dorsal oral collars.

Americas predominantly in the neotropical region with approximately 300 described species (Marinoni *et al.* 2007). Species belonging to this genus or to the *O. stenogaster* group have been reported predating over aphids, psyllids and mites. In Brazil they have been found predating mealybugs on cassava (*Phenacoccus* spp.) (Löhr *et al.*, 1990).

ACKNOWLEDGEMENTS

We thank Miriam N. Morales (Visiting Researcher, Lavras Federal University-UFLA), who identified the adult hoverfly.

LITERATURE CITED

Ben-Dov, Y., D.R. Miller and G.A.H. Gibson. 2014. ScaleNet. United States Department of Agriculture, Systematic Entomology Laboratory. Accessed at http://www.sel.barc.usda.gov/scalenet/scalenet.htm, 18 September 2014.

Hempel, A. 1919. Descripção de duas novas espécies de Coccidas. Revista do Museu Paulista 11: 452–457.

Kondo, T., A.A. Ramos-Portilla and E.V. Vergara-Navarro. 2008. Updated list of mealybugs and putoids from Colombia (Hemiptera: Pseudococcidae and Putoidae). Boletín del Museo de Entomología de la Universidad del Valle 9(1): 29–53.

Löhr, B., A.M. Varela and B. Santos. 1990. Exploration for natural enemies of the cassava mealybug, *Phenacoccus manihoti* (Homoptera: Pseudococcidae), in South America, for the biological control of this introduced pest in Africa. Bulletin of Entomological Research 80: 417-425.

Marinoni, L., M.N. Morales and I. Spaler. 2007. Chave de identificação ilustrada para os gêneros de Syrphinae (Diptera, Syrphidae) de ocorrência no sul do Brasil. Biota Neotropica 7(1): 143-158.

Santa-Cecília, L.V.C. and B. Souza. 2014. Cochonilhas-farinhentas de maior ocorrência em cafeeiros no Brasil. Informe Agropecuário 35(280): 45–54.

Williams, D.J. and M.C. Granara de Willink. 1992. Mealybugs of Central and South America. Wallingford, U.K.: C.A.B International. 635 pp.

Figure 5. *Nipaecoccus coffeae*: two sizes of dorsal oral collars

Figure 6. *Ocyptamus stenogaster* (Diptera, Syrphidae), predator of the *Nipaecoccus coffeae.*

Authors' contribution statement: EP identified the insect and wrote the text. LVC contributed to the data analysis and correction of the text. PR contributed to the data analysis and field observations. EM Collected the insect and field observations.

Received: 15 October 2014
Accepted: 2 June 2015
Academic editor: Aline Barcellos